

Claims

What is claimed is:

1. A method for analyzing compliance, of one or more pieces of equipment, with a payload standard, the method comprising:
 - determining a target payload for the one or more pieces of equipment;
 - obtaining payload weight data for the one or more pieces of equipment;
 - comparing the obtained payload weight data with the determined target payload; and
 - analyzing compliance with the payload standard based on the results of the comparison.
2. The method of claim 1, wherein the step of analyzing compliance includes the steps of:
 - analyzing compliance with a first payload standard based on the results of the comparison; and
 - analyzing compliance with a second payload standard based on the results of the comparison, wherein the first payload standard does not equal the second payload standard.
3. The method of claim 1, wherein the target payload is determined based on at least one of the following features: slope of terrain, type of terrain, or type of payload.
4. The method of claim 1, further including the step of determining an empty machine weight for the equipment type, the step including:
 - obtaining an empty machine weight for two or more pieces of equipment of the equipment type; and

calculating an average of the obtained empty machine weights.

5. The method of claim 1, further including the step of determining an empty machine weight for the vehicle type, the step including:
obtaining an empty machine weight for two or more pieces of equipment, wherein the two or more pieces of equipment are members of a fleet of equipment of the equipment type;
calculating an average of the obtained empty machine weights;
and
applying the average as the determined empty machine weight for each piece of equipment in the fleet.

6. The method of claim 1, wherein the step of determining a target payload includes the steps of:
determining an empty machine weight for the equipment type;
determining a maximum gross machine weight for the equipment type; and
subtracting the determined empty machine weight from the determined maximum gross machine weight.

7. The method of claim 1, wherein the step of analyzing compliance includes the steps of:
calculating a mean payload value based on the payload weight data;
calculating a standard deviation based on the payload weight data;
and
determining a distribution of payloads based on the calculated mean payload value and the calculated standard deviation.

8. The method of claim 1, wherein the payload standard includes an acceptable overload value and an unacceptable overload value and the step of analyzing compliance includes the steps of:

determining a first percentage of the payload weight data where each payload weight included in the first percentage is less than the acceptable overload value; and

determining a second percentage of the payload weight data, where each payload weight included in the second percentage is greater than the unacceptable overload value.

9. The method of claim 8, wherein the step of determining a second percentage includes the steps of:

choosing the lesser of the unacceptable overload value or a maximum gross machine weight as a maximum threshold; and

determining a second percentage of the payload weight data, where each payload weight included in the second percentage is greater than the maximum threshold.

10. The method of claim 8, further including the step of: providing a compliance rating for the one or more pieces of equipment based on the determined first and second percentages..

11. The method of claim 1, wherein the step of analyzing compliance includes the step of:

providing a compliance rating for the one or more pieces of equipment based on the results of the comparison.

12. The method of claim 1, wherein the step of analyzing compliance includes the step of:

providing a compliance rating for the one or more pieces of equipment based on a set of one or more predetermined factors.

13. The method of claim 1, further including the step of:
displaying graphical results illustrating the results of the
compliance analysis.

14. The method of claim 1, wherein the step of analyzing
compliance includes the step of:
calculating a modified target payload weight based on an analysis
of previous payload weight data.

15. The method of claim 14, wherein the step of calculating a
modified target payload weight includes the step of:
multiplying the standard deviation of the payload weight data by a
predetermined factor to obtain an offset; and
subtracting the offset from a maximum acceptable payload weight.

16. The method of claim 1, further comprising the step of:
determining equipment identification information about the one or
more pieces of equipment.

17. A computer-readable medium including instructions for
performing a method, when executed by a processor, for analyzing compliance,
of one or more pieces of equipment, with a payload standard, the method
comprising:

determining a target payload for the one or more pieces of
equipment;

obtaining payload weight data for the one or more pieces of
equipment;

comparing the obtained payload weight data with the determined
target payload; and

analyzing compliance with the payload standard based on the
results of the comparison.

18. The computer-readable medium of claim 17, wherein the step of analyzing compliance includes the steps of:

analyzing compliance with a first payload standard based on the results of the comparison; and

analyzing compliance with a second payload standard based on the results of the comparison, wherein the first payload standard does not equal the second payload standard.

19. The computer-readable medium of claim 17, wherein the target payload is determined based on at least one of the following features: slope of terrain, type of terrain, or type of payload.

20. The computer-readable medium of claim 17, wherein the method further includes the step of determining an empty machine weight for the equipment type, the step including:

obtaining an empty machine weight for two or more pieces of equipment of the equipment type; and

calculating an average of the obtained empty machine weights.

21. The computer-readable medium of claim 17, wherein the method further includes the step of determining an empty machine weight for the equipment type, the step including:

obtaining an empty machine weight for two or more pieces of equipment, wherein the two or more pieces of equipment are members of a fleet of pieces of equipment of the equipment type;

calculating an average of the obtained empty machine weights;

and

applying the average as the determined empty machine weight for each piece of equipment in the fleet.

22. The computer-readable medium of claim 17, wherein the step of determining a target payload includes the steps of:

determining an empty machine weight for the equipment type;
determining a maximum gross machine weight for the equipment type; and

subtracting the determined empty machine weight from the determined maximum gross machine weight.

23. The computer-readable medium of claim 17, wherein the step of analyzing compliance includes the steps of:

calculating a mean payload value based on the payload weight data;
calculating a standard deviation based on the payload weight data;
and

determining a distribution of payloads based on the calculated mean payload value and the calculated standard deviation.

24. The computer-readable medium of claim 17, wherein the payload standard includes an acceptable overload value and an unacceptable overload value and the step of analyzing compliance includes the steps of:

determining a first percentage of the payload weight data where each payload weight included in the first percentage is less than the acceptable overload value; and

determining a second percentage of the payload weight data, where each payload weight included in the second percentage is greater than the unacceptable overload value.

25. The computer-readable medium of claim 24, wherein the step of determining a second percentage includes the steps of:

choosing the lesser of the unacceptable overload value or a maximum gross machine weight as a maximum threshold; and

determining a second percentage of the payload weight data, where each payload weight included in the second percentage is greater than the maximum threshold.

26. The computer-readable medium of claim 24, further including the step of:

providing a compliance rating for the one or more pieces of equipment based on the determined first and second percentages.

27. The computer-readable medium of claim 17, wherein the step of analyzing compliance includes the step of:

providing a compliance rating for the one or more pieces of equipment based on the results of the comparison.

28. The computer-readable medium of claim 17, wherein the step of analyzing compliance includes the step of:

providing a compliance rating for the one or more pieces of equipment based on a set of one or more predetermined factors.

29. The computer-readable medium of claim 17 wherein the method further includes the step of:

displaying graphical results illustrating the results of the compliance analysis.

30. The computer-readable medium of claim 17, wherein the step of analyzing compliance includes the step of:

calculating a modified target payload weight based on an analysis of previous payload weight data.

31. The computer-readable medium of claim 30, wherein the step of calculating a modified target payload weight includes the step of:

multiplying the standard deviation of the payload weight data by a predetermined factor to obtain an offset; and
subtracting the offset from a maximum acceptable payload weight.

32. The computer-readable medium of claim 17, wherein the method further includes the step of:
determining equipment identification information about the one or more pieces of equipment.

33. A system for analyzing compliance, of one or more pieces of equipment, with a payload standard, the system comprising:
an input module for receiving data about the one or more pieces of equipment;
a processing module, connected to the input module, for analyzing the data about the one or more pieces of equipment based on the payload standard; and
an output module, connected to the processing module, for providing the results of the analysis of the data.

34. The system of claim 33, wherein the input module is connected to at least one of a network connection, a device for accessing stored data, or a data input device.

35. The system of claim 33, wherein the one or more pieces of equipment are connected to the input module by a network connection.

36. The system of claim 33, wherein the output module is connected to at least one of a monitor, a printer, a device to store data, or a device to send data over a network.

37. The system of claim 33, wherein the processing module includes:

a payload database;
a processor; and
an equipment database;

wherein the payload database includes payload weight data from the one or more pieces of equipment and the equipment database contains data about the payload standard.

38. A method for reviewing a request for warranty service on a piece of equipment subject to a payload standard, the method comprising:

receiving payload weight data associated with the piece of equipment;

analyzing the payload weight data for compliance with the payload standard; and

responding to the request for warranty service based on the analysis.

39. The method of claim 38, wherein the step of analyzing the payload weight data includes:

determining a first percentage of the payload weight data where each payload weight included in the first percentage is less than an acceptable overload value; and

determining if the first percentage is less than a predetermined threshold value.

40. A method for maintaining compliance with a payload standard for one or more pieces of equipment, where a first target payload is known for the one or more pieces of equipment, the method comprising:

at periodic intervals, obtaining payload weight data associated with one or more pieces of equipment;

analyzing the payload weight data based on the payload standard and the first target payload;

receiving, as a result of the analysis, a second target payload; and
modifying loading practices for the one or more pieces of
equipment based on the second target payload.

41. A method for scheduling maintenance for one or more
pieces of equipment subject to a payload standard, the method comprising:

receiving payload weight data associated with the one or more
pieces of equipment;

analyzing the payload weight data for compliance with the
payload standard; and

scheduling maintenance for the one or more pieces of equipment
based on the analysis.